Russian Bee Project

Efforts to find a honey bee that is genetically resistant to the varroa and tracheal mites led researchers at the USDA Honey Bee Research Laboratory in Baton Rouge, Louisiana, to Russia. There, on the far eastern side of that vast nation, in the coastal Primorski region around Vladivostok, they found what they sought—a promising strain of *Apis mellifera*. These Russian bees had been exposed to varroa mites for approximately 150 years, much longer than other *Apis mellifera* strains had, and the researchers surmised that the Russian bees could have developed a resistance to the mites. Indeed, subsequent research has shown that these Russian bees are more than twice as resistant to varroa mites than other honey bees. Moreover, they are highly resistant to tracheal mites, the other mortal enemy of bees. Russian bees also tend to produce as much honey as standard bee stocks, if not more.

A number of American queen breeders now produce Russian queens for sale. These breeders are located all across the country, but most are concentrated in the South and in California. Many of the Russian queens on the market are hybrid daughters of a breeder queen openly mated to any drone, which may come from a variety of stocks within two miles of a particular mating yard. The resulting colonies are genetic hybrids. Recent research has suggested the hybrids are only partially resistant to mites, but studies at North Carolina State University show that partial resistance is statistically significant when the hybrids are compared to Italian bees.

Production of pure Russian queens can be guaranteed only by truly isolating the breeding grounds, as has been done at the USDA's bee laboratory on Grand Terre Island, 25 miles off the coast of Louisiana. Here the drone stock is also controlled.

Management of Russian bees

Russian bees are quite different from standard Italian bees in several ways (Table 1):

- Russian bees do not build their colony populations until pollen is available, and they shut down brood rearing when pollen is scarce. This characteristic makes them suitable in areas where the main honey and pollen flows occur later in the year, such as the mountains of North Carolina. By contrast, Italian bees maintain a large brood area and worker population regardless of environmental conditions. This trait can result in more bees than the hive can feed and may lead Italian colonies to early winter starvation. It also explains the Italian bee's tendency to rob other colonies of their honey stores.
- Russian colonies maintain active queen cells through out the brood-rearing season. In Italian colonies, the presence of queen cells is interpreted by beekeepers as an attempt to swarm (reduce overcrowding by establishing a new colony) or to supersede (kill and replace) the resident queen. This is not the case with Russian colonies, as the workers often destroy the extra queen cells before they fully develop.
- Russian bees can vary in color, but they are generally darker than the Italians.

Requeening Italian hives with Russian queens can be difficult, and many beekeepers lose their newly introduced Russian queens. Russian queens have a different "odor" than Italians, and parent colonies must become acclimated to this odor before they will accept the newcomers. Beekeepers who intend to go from Italian to Russian bees should requeen a colony in the fall by splitting the hive in two with the use of a double screen (see highlighted information). This will permit the odors to mix but, at the same time, prevent the workers from interacting with the new queen. The old Italian queen should be kept in the lower half, and the new Russian queen should be placed in the upper half in a cage. If a separate entrance is provided to the upper half, only young nurse bees will enter the top portion, and the older foraging bees will return to the lower hive.

Table 1. A comparison of various colony characteristics of Italian and Russian honey bees

Characteristic	*Italians*	*Russians*
Varroa mites	More susceptible	More resistant
Tracheal mites	More susceptible	Highly resistant
Brood rearing	Continuous throughout the summer	Usually only during times of pollen availability
Robbing	High	Low
Queen cells	Only during swarming or queen replacement	Present most of the time
Pollination skills	Small difference from Russian bees	Small difference from Italian bees
Temperament	Gentle, less defensive; not likely to sting	Gentle, less defensive; not likely to sting
Color	Light	Dark